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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,632	09/05/2006	Martyn Vincent Twigg	JMYT-370US	3293

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EXAMINER

TAKEUCHI, YOSHITOSHI

ART UNIT	PAPER NUMBER
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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,632	Applicant(s) TWIGG, MARTYN VINCENT	
	Examiner YOSHITOSHI TAKEUCHI	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10, 15, 16 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 15, 16 and 18-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-8, 10, 15-16, and 18-24 are presented for examination, wherein claims 1 and 18 are currently amended. Claims 9, 11-14, and 17 are cancelled.
2. The prior 35 U.S.C. § 103(a) rejections of claims 1-8, 10, 15-16, and 18-24 are withdrawn as a result of the applicant's amendments to claims 1 and 18.

Information Disclosure Statement

3. Regarding the IDS provided on September 4, 2009, an English abstract is not provided for foreign reference DE 40 40 450 A1, as required by MPEP § 609.04(a). As a result, the examiner has not considered it in this action.

Means Plus Function – 35 USC § 112 sixth paragraph

4. Regarding claims **18-20**, applicant claims "means for sealingly isolating," "means for reducing pressure," and "means for dosing."

A claim limitation will be presumed to invoke 35 U.S.C. § 112, sixth paragraph, if it meets the following 3-prong analysis: (A) the claim limitations uses the phrase "means for" or "step for;" (B) the "means for" or "step for" is modified by functional language; and (C) the phrase "means for" or "step for" is not modified by sufficient structure, material, or acts for achieving the specified function. See MPEP § 2181(I).

To properly invoke 35 U.S.C. § 112 sixth paragraph, the specification must provide an adequate disclosure showing what is meant by that language in a way that one skilled in the art will understand what structure (or material or acts) will perform the recited function. See Atmel

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Corp. v. Information Storage Devices, Inc., 198 F.3d 1374, 1381 (Fed. Cir. 1999). See also

MPEP § 2181(II). Failure to comply in effect renders the claim indefinite. In re Donaldson Co.,

16 F.3d 1189, 1195 (Fed. Cir. 1994) (in banc). See also MPEP § 2181(II).

Claim Language	Structural Supporting Language	Citation to Specification
Means for sealingly isolating	“Sealable closure 130 can comprise interlocking members (not shown) on first end 150 and second end 240 of the contained and an optionally expandable o-ring or gasket made from a rubber such as a synthetic rubber polymer.”	p.11
Means for reducing pressure	“A first end 150 of the container 120 is connected to a vacuum pump 16 via pressurisable line 180.”	p.10
Means for dosing	"Valve 300 and pump 310, each also 25 controlled by CPU 220, in combination provide a means for dosing the isolated and evacuated channels with a pre-determined quantity of the liquid."	p.10
Means for maintaining the reduced pressure	“By means of vacuum pump 160 and valve 200 controlled by CPU 200, a predetermined reduction of pressure in container 220 and filter 140 is achieved by feedback from sensor to CPU 220.”	p.11

Claim 18 properly invokes 35 U.S.C. § 112 sixth paragraph.

However, claims 19-20 do not invoke 35 U.S.C. § 112 sixth paragraph since structural limitations are imposed to the means-plus-function language. Claim 19 imposes structure via “a pressurisable container having a closure having a sealable closure” “means for sealingly isolating;” and claim 20 imposes structure via, “means for maintaining the reduced pressure” to “means for maintaining the reduced pressure.”

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-8, 10, 15-16, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimrock et al (US 4,550,034).

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a. Regarding claim 1, Shimrock teaches a method of impregnating ceramic monolithic structures with predetermined amounts of catalyst comprising the steps of: (a) reducing the pressure in a pore structure of the channel walls relative to the surrounding atmospheric pressure to provide evacuated channel walls, wherein the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter, (b) contacting a surface of the evacuated channel walls with a liquid containing at least one catalyst component or a precursor thereof, wherein the liquid permeates the pore structure of the evacuated channel walls (abstract), (c) drying the filter containing the catalyst component or its precursor (3:36-37), and (d) calcining the monolith containing the catalyst component or its precursor (5:30-34).

The instant invention is for a method, wherein the preamble, “a catalyzed ceramic wall-flow filter comprising a plurality of channels” does not patentably distinguish the instant invention from Shimrock. See MPEP § 2111.02(II).

Shimrock does not expressly teach reducing the pressure in the pore structure of the wall-flow filter occurs prior to contacting the surface of the evacuated channel walls with the liquid. However, claim 1 teaches the use of a vacuum, which can only be applied either before or after contacting the surface of the evacuated channel walls with the liquid. So, it would have been obvious to a person of ordinary skill at the time of the invention to draw a vacuum prior to contacting the surface of the evacuated channel walls with the liquid in the invention of Shimrock.

b. Regarding claim 2, Shimrock suggests the method of claim 1, wherein the steps (b) and (c) are repeated at least once prior to step (d). (3:41-47).

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- c. Regarding claim **3**, Shimrock suggests the method of claim 1, wherein the pressure reduction in the pore structure of the channel walls is maintained during the liquid contacting step (abstract, via vacuum impregnation).
- d. Regarding claim **4**, Shimrock suggests the method of claim 1, wherein the liquid contains the precursor and comprises an aqueous solution of at least one metal salt. (5:37-42, e.g. palladium chloride).
- e. Regarding claim **5**, Shimrock suggests the method of claim 1, wherein the liquid containing at least one catalyst component comprises a slurry of at least one particulate metal oxide material in a carrier medium. (5:37-42, e.g. alumina).
- f. Regarding claim **7**, Shimrock suggests the method of claim 1, wherein the liquid containing the at least one catalyst component comprises a sol of at least one metal oxide material in a carrier medium. (5:37-42, e.g. alumina suspended in slurry).
- g. Regarding claim **15**, Shimrock suggests the method of claim 1, wherein the ceramic filter is made from a material selected from the group consisting of silicon, silicon carbide, aluminum nitride, silicon nitride, aluminum titanate, alumina, cordierite, mullite pollucite and a thermet. (8:44-48, where Example 1 used cordierite ($2 \text{ MgO} \cdot 2 \text{ Al}_2\text{O}_3 \cdot 5 \text{ SiO}_2$)).
- h. Regarding claims **22-23**, Shimrock suggests the methods of claims 5 and 7, wherein the carrier medium comprises water (5:27, wherein the carrier of a slurry is implied to be water).
- i. Regarding claims **6, 8, 10, and 16**, Shimrock suggests the methods of claims 1, 5, and 7, wherein Shimrock teaches optimizing the viscosity of the slurry and vacuum.

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However, it does not expressly teach the particulate metal oxide material having a D50 in the range 1-20 microns, the sol particles having a D50 in the range 10-500 nm, the catalyst component loaded in the catalyzed ceramic wall-flow filter in an amount from 20-120g/litre, or the filter having a porosity of 40-60% prior to use.

However, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

In re Aller, 220 F.2d 454, 456 (CCPA 1955). See also MPEP 2144.05(II)(A).

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimrock et al (US 4,550,034) in view of Twigg et al (US 2007/0028604).

a. Shimrock suggests the method of claim 15, wherein the ceramic monolithic structure is composed of ceramic (abstract), such as cordierite (8:44-48) for use in vehicular exhaust systems (1:14-15). Furthermore, Shimrock teaches the use of refractory crystalline materials are used as the skeleton. (1:25-29). However, Shimrock does not expressly teach the material from which the ceramic filter is made to be thermet, wherein the thermet is selected from the group consisting of $\text{Al}_2\text{O}_3/\text{Fe}$, $\text{Al}_2\text{O}_3/\text{Ni}$ and $\text{B}_4\text{C}/\text{Fe}$.

Twigg teaches a catalyzed filter for an engine (abstract), wherein the exhaust filter skeleton can be composed of a ceramic, a thermet such as $\text{Al}_2\text{O}_3/\text{Fe}$, $\text{Al}_2\text{O}_3/\text{Ni}$ and $\text{B}_4\text{C}/\text{Fe}$, or a composite of the two (¶0014).

As a result, it would have been obvious to a person of ordinary skill at the time of the invention to substitute the Twigg thermet selected from the group consisting of $\text{Al}_2\text{O}_3/\text{Fe}$, $\text{Al}_2\text{O}_3/\text{Ni}$ and $\text{B}_4\text{C}/\text{Fe}$ in the method of Shimrock since Twigg teaches thermets

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such as $\text{Al}_2\text{O}_3/\text{Fe}$, $\text{Al}_2\text{O}_3/\text{Ni}$ and $\text{B}_4\text{C}/\text{Fe}$ can be substituted for or combined with the ceramics of Shimrock, for use in vehicular exhaust systems (abstract and ¶0014).

5. Claims 18 and 20-21 are rejected under 35 U.S.C. 103(a) as being obvious by Shimrock et al (US 4,550,034) in view of Ellis (US 6,695,278).

a. Regarding claim **18**, Shimrock teaches an apparatus for use in manufacturing a catalyzed ceramic monolith, wherein the apparatus comprises a means for sealingly isolating the plurality of channels of the ceramic wall flow filter from the surrounding atmosphere (Figure 1, items 14 and 16), a vacuum for reducing pressure in the isolated channels to below the surrounding atmospheric pressure thereby to establish a vacuum in the pore structure of the filter walls to provide isolated and evacuated channels (Figure 1, vacuum implied from pulling a vacuum per 23), at least one reservoir for holding a liquid containing at least one catalyst component or a precursor thereof (Figure 1, items 11 and 16), and a means for dosing the isolated and evacuated channels with a pre-determined quantity of the liquid (4:40-43 and Figure 1, item 13a, where the valve may be automatically be operated).

The instant invention is for an apparatus, wherein the preamble, “for use in manufacturing a catalyzed ceramic wall-flow filter having filter walls, wherein filter walls define a plurality of channels and have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter,” does not patentably distinguish the instant invention from Shimrock. See MPEP § 2111.02(II).

While Shimrock teaches the valve may be automatically operated, it does not expressly teach a CPU connected to the valve. However, Ellis teaches an automated flow control valve that is used to precisely dispense slurry (abstract), where the valve is connected to a CPU (Figure 6). As a result, it would have been obvious to a person of ordinary skill at the time of the invention to connect the CPU of Ellis to the valve in the Shimrock apparatus of in order to precisely control the amount of slurry dispensed, as taught by Ellis (Figure 6).

b. Regarding claim **20**, Shimrock in view of Ellis teaches the apparatus of claim 18, wherein the means for maintaining the reduced pressure in the isolated channels to below the surrounding atmospheric pressure comprises means for maintaining the reduced pressure during dosing of the liquid (Figure 1, item 23).

c. Regarding claim **21**, Shimrock in view of Ellis teaches the apparatus of claim 18, wherein the apparatus is at least semi-automated to control the means for dosing the liquid. (4:4-5). Shimrock does not expressly teach at least semi-automating the control over the means for reducing pressure in the isolated channels.

However, Shimrock teaches two of the important characteristics of its invention are improved processing speed and improved uniformity of the coating distribution. So the examiner takes official notice that it would have been obvious to a person of ordinary skill at the time of the invention to at least semi-automate the control over the means for reducing pressure in the isolated channels in the invention of Shimrock.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being obvious by Shimrock et al (US 4,550,034) in view of Ellis (US 6,695,278) and further in view of Ikeda (US 4,562,821).

a. Regarding claim **19**, Shimrock in view of Ellis teaches the apparatus of claim 18, wherein the means for sealingly isolating the plurality of channels comprises a pressurisable container having a sealable closure for receiving the ceramic wall-flow filter (4:6-12 and Figure 1, item 14). Further, Shimrock teaches controlling the vacuum pressure (see e.g. 6:15-17) as an integral part of a precisely controlling the addition of slurry to the ceramic (2:63-67).

Shimrock does not expressly teach a CPU, sensor, and valve connected to the vacuum pump. Ikeda teaches a method of precisely controlling the movement of gas (abstract) using a CPU, sensor, and valve connected to the vacuum pump (2:54-66). As a result, it would have been obvious to a person of ordinary skill at the time of the invention to connect a CPU, sensor, and valve with the vacuum pump of Shimrock and Ellis, in order to precisely control the removal of gas, as taught by Ikeda (abstract and 2:54-66).

Response to Arguments

9. Applicant's arguments with respect to claims 1-8, 10, 15-16, and 18-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSHITOSHI TAKEUCHI whose telephone number is (571) 270-5828. The examiner can normally be reached on Monday-Thursday 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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